National Institute of Environmental Health Sciences

Climate change and thermal bioclimate in cities: Impacts and options for adaptation in Freiburg, Germany

Author(s): Matzarakis A, Endler C
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Abstract:

The concept of physiologically equivalent temperature (PET) has been applied to the analysis of thermal bioclimatic conditions in Freiburg, Germany, to show if days with extreme bioclimatic conditions will change and how extreme thermal conditions can be modified by changes in mean radiant temperature and wind speed. The results show that there will be an increase of days with heat stress (PET > 35 degrees C) in the order of 5% (from 9.2% for 1961-1990) and a decrease of days with cold stress (PET < 0 degrees C) from 16.4% to 3.8% per year. The conditions can be modified by measures modifying radiation and wind speed in the order of more than 10% of days per year by reducing global radiation in complex structures or urban areas.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES), Other Climate Scenario

Special Report on Emissions Scenarios (SRES) Scenario: SRES A1, SRES B1

Other Climate Scenario: A1B

Exposure :

weather or climate related pathway by which climate change affects health

Meteorological Factors, Meteorological Factors, Solar Radiation, Temperature, Other Exposure

Other Exposure: Cloud cover

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Germany

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content